Wireless Vantage Pro2™ & Vantage Pro2™ Plus Stations

(Including Fan-Aspirated Models)



6153 6163

Vantage Pro2TM (6152, 6153) and Vantage Pro2TM Plus (6162, 6163) Wireless Weather Stations include two components: the Integrated Sensor Suite (ISS) which houses and manages the external sensor array, and the console which provides the user interface, data display, and calculations. The ISS and Vantage Pro2 console communicate via an FCC-certified, license-free, spread-spectrum frequency-hopping (FHSS) transmitter and receiver. User-selectable transmitter ID codes allow up to eight stations to coexist in the same geographic area. The frequency hopping spread spectrum technology provides greater communication strength over longer distances and areas of weaker reception. The Wireless Vantage Pro2 Plus weather station includes two additional sensors that are optional on the Vantage Pro2: the UV sensor and the solar radiation sensor.

The console may be powered by batteries or by the included AC-power adapter. The wireless ISS is solar powered with a battery backup. Use WeatherLink® for Vantage Pro2 and Vantage Vue® to let your weather station interface with a computer, to log weather data, and to upload weather information to the internet.

The 6152 and 6162 rely on passive shielding to reduce solar-radiation induced temperature errors in the outside temperature sensor readings. The Fan-aspirated 6153 and 6163 combine passive shielding with a solar-powered fan that draws outside air in over the temperature and humidity sensors, providing a much more accurate temperature reading than that available using passive shielding alone.

Integrated Sensor Suite (ISS)

(Includes product numbers: 6152, 6153, 6162, 6163, 6322, 6323, 6327 & 6328)

C	rating Temperature
N	-operating Temperature
С	rent Draw (ISS SIM only)
S	r Power Panel
В	ery (ISS SIM /Fan-Aspirated)
В	ery Life (3-Volt Lithium cell) 8 months without sunlight - greater than 2 years depending on solar charging
В	ery Life (NiCad C-cells, Fan-Aspirated) 1 year
F	Aspiration Rate (Fan-Aspirated only)
	Intake Flow Rate, full sun
	Intake Flow Rate, battery only80 feet/min. (0.4 m/s)
	Sensor Chamber Flow Rate, full sun 500 feet/min. (2.5 m/s)
	Sensor Chamber Flow Rate, battery only 280 feet/min. (1.4 m/s)
С	nectors, Sensor
С	le Type4-conductor, 26 AWG
C	le Length, Anemometer
Note:	Maximum displayable wind decreases as the length of cable increases. At 140' (42 m) of cable, the maximum wind speed displayed is 135 mph (60 m/s); at 240' (73 m), the maximum wind speed displayed is 100 mph (34 m/s).
	d Speed Sensor
	d Direction Sensor
	2 Birodion Concor

collection area

ISS Dimensions (not including anemometer or bird spikes):

Relative Humidity Sensor Type Film capacitor element

2 Wireless Vantage Pro2[™]

Vantage Pro2 with Standard Rad Shield	14.0" x 9.4" x 14.5" (356 mm x 239 mm x 368 mm)
Vantage Pro2 with Fan-Asprated Rad Shield	20.8" x 9.4" x 16.0" (528 mm x 239 mm x 406 mm)
Vantage Pro2 Plus with Standard Rad Shield	14.3" x 9.7" x 14.5" (363 mm x 246 mm x 368 mm)
Vantage Pro2 Plus with Fan-Aspirated Rad Shield	21.1" x 9.7" x 16.0" (536 mm x 246 mm x 406 mm)

Console

(Incluces product number 6312)

Console Operating Temperature+32° to +140°F (0° to +60°C) each optional wireless transmitter received by the console) at 4 - 6 VDC Console Display Type LCD Transflective Display Backlight LEDs Console Dimensions Console with antenna extended up (L x H x D) 10.625" x 9.625" x 1.625" (270 mm x 245 mm x 41 mm)

Data Displayed on Console

Data display categories are listed with General first, then in alphabetical order.

General

Historical Data	. Includes the past 24 values listed unless otherwise noted; all can be cleared and all totals reset
Daily Data	. Includes the earliest time of occurrence of highs and lows; period begins/ends at 12:00 am
Monthly Data	. Period begins/ends at 12:00 am on the first of the month
Yearly Data	. Period begins/ends at 12:00 am on the first of January unless otherwise noted
Current Display Data	. Current display data describes the current reading for each weather variable. In most cases, the variable lists the most recently updated reading or calculation. Some current variable displays can be adjusted so there is an offset for the reading
Current Graph Data	. Current graph data appears in the right-most column in the console graph and represents the latest value within the last period on the graph; totals can be set or reset. Display intervals vary. Examples include: Instant, 15-min., and Hourly Reading; Daily, Monthly, High and Low
Graph Time Interval	.1min.,10min.,15min.,1hour,1day,1month,1year(user-selectable,availabilitydependsuponvariableselected)
Graph Time Span	. 24 Intervals + Current Interval (see Graph Intervals to determine time span)
Graph Variable Span (Vertical Scale)	. Automatic (varies depending upon data range); Maximum and Minimum value in range appear in ticker
Alarm Indication	. Alarms sound for only 2 minutes (time alarm is always 1 minute) if operating on battery power. Alarm message is displayed in ticker as long as threshold is met or exceeded. Alarms can be silenced (but not cleared) by pressing the DONE key.
Transmission Interval	. Varies with transmitter ID code from 2.25 seconds (#1=shortest), to 3 seconds (#8=longest)
Update Interval	. Varies with sensor - see individual sensor specs
ometric Pressure	

elevation to -999' when using feet as elevation unit.)

Sea-Level Reduction Equation Used...... United States Method employed prior to use of current "R Factor" method

Equation Source Smithsonian Meteorological Tables

Elevation Accuracy Required ±10' (3m) to meet equation accuracy specification

Overall Accuracy ±0.03" Hg (±0.8 mm Hg, ±1.0 hPa/mb)

Trend (change in 3 hours)...... Change 0.06" (2 hPa/mb,1.5 mm Hg) = Rapidly

Change 0.02" (0.7hPa/mb, 0.5 mm Hg)= Slowly

Update Interval 1 minute or when console BAR key is pressed twice

Current Display Instant

Current Graph Data Instant, 15-min., and Hourly Reading; Daily, Monthly, High and Low

Low Threshold from Current Trend for Storm Warning (Falling Trend)

Range for Rising and Falling Trend Alarms 0.01 to 0.25" Hg (0.1 to 6.4 mm Hg, 0.1 to 8.5 hPa/mb)

Clock

that observe it in AUTO mode, MANUAL setting available for all other areas)

Date: Automatic Leap Year

Alarms Once per day at set time when active

Dewpoint (calculated)

Range.....-105° to +130°F (-76° to +54°C)

 Accuracy
 ±3°F (±1.5°C) (typical)

 Update Interval
 10 to 12 seconds

Current Display Data Instant Calculation

Evapotranspiration (calculated, requires solar radiation sensor)

Resolution and Units. 0.01" or 0.1 mm (user-selectable)

Accuracy Greater of 0.01" (0.25 mm) or ±5%, Reference: side-by-side comparison against a

CIMIS ET weather station

Calculation and Source...... Modified Penman Equation as implemented by CIMIS (California Irrigation

Management Information System) including Net Radiation calculation

Current Display Data Latest Hourly Total Calculation

Current Graph Data Latest Hourly Total Calculation, Daily, Monthly, Yearly Total

Historical Graph Data Hourly, Daily, Monthly, Yearly Totals

Wireless Vantage Pro2[™]

Forecast

Variables Used.......Barometric Reading & Trend, Wind Speed & Direction, Rainfall, Temperature,

Humidity, Latitude & Longitude, Time of Year

Heat Index (calculated)

range of use

Humidity

Inside Relative Humidity (sensor located in console)

Current Display DataInstant (user-adjustable offset available)

Outside Relative Humidity (sensor located in ISS)

Resolution and Units......1%

Range.....1 to 100% RH

Accuracy±3% (0 to 90% RH), ±4% (90 to 100% RH)

 Drift
 ±0.5% per year

 Update Interval
 50 seconds to 1 minute

Extra Outside Relative Humidity (sensor located inside Temperature/Humidity Station)

Resolution and Units......1%

Range......1 to 100% RH

 Drift
 ±0.5% per year

 Update Interval
 50 seconds to 1 minute

Current Display DataInstant Reading (user adjustable)

Leaf Wetness (requires leaf wetness sensor)

Resolution 1

Range...... 0 to 15

Dry/Wet Threshold User-selectable

Accuracy ±0.5

Current Graph Data Instant Reading; Daily High and Low; Monthly High Historical Graph Data Hourly Readings; Daily Highs and Lows; Monthly Highs

Moon Phase

resolution)

Gibbous, Last Quarter, Waning Crescent

Rainfall

Accuracy For rain rates up to 4"/hr (100 mm/hr): ±4% of total or ± one tip of the

bucket (0.01"/0.2mm), whichever is greater.

Update Interval 20 to 24 seconds

a storm event

Current Display Data Totals for Past 15-min

selectable) and Storm (with begin date); Umbrella is displayed when 15-minute

total exceeds zero

Historical Graph Data Totals for 15-min, Daily, Monthly, Yearly (start date user-selectable) and Storm

(with begin and end dates)

24-Hour Total, Storm Total,

Range for Rain Alarms 0 to 99.99" (0 to 999.7 mm)

Rain Rate

Calculation Method Measures time between successive tips of tipping bucket. Elapsed time greater

than 15 minutes or only one tip of the rain collector constitutes a rain rate of zero.

Current Display Data Instant

Current Graph Data Instant and 1-min. Reading; Hourly, Daily, Monthly and Yearly High

Alarm High Threshold from Instant Reading

Soil Moisture (requires soil moisture sensor)

 Resolution
 1 cb

 Range
 0 to 200 cb

 Update Interval
 77 to 90 seconds

Solar Radiation (requires solar radiation sensor)

Range 0 to 1800 W/m²

Current Graph Data Instant Reading and Hourly Average; Daily, Monthly High

Sunrise and Sunset

Temperature

Inside Temperature (sensor located in console)

°F rounded to the nearest 1°C

Historical Data and Alarms: 1°F or 1°C (user-selectable)

Current Display Data Instant (user-adjustable offset available)

Outside Temperature (sensor located in ISS)

°C is converted from °F rounded to the nearest 1°C Historical Data and Alarms: 1°F

or 1°C (user-selectable)

Sensor Accuracy±1°F (±0.5°C) above 20°F (-7°C), ±2°F (±1°C) under 20°F (-7°C) (see Fig. 1)

Radiation Induced Error (Passive Shield) $+4^{\circ}F$ (2°C) at solar noon (insolation = 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 2 mph (1 m/m²) at 1040 W/m², avg. wind speed \leq 3

s)) (reference: RM Young Model 43408 Fan-Aspirated Radiation Shield)

Radiation Induced Error (Fan-Aspirated Shield) +0.6°F (0.3°C) at solar noon (insolation = 1040 W/m², avg. wind speed \leq 2 mph

(1 m/s)) (reference: RM Young Model 43408 Fan-Aspirated Radiation Shield)

Extra Temperature Sensors or Probes

nearest 1°C

Historical Data and Alarms: 1°F or 1°C (user-selectable)

Range....-40° to +150°F (-40° to +65°C)

Moisture/Temperature Stations)

Temperature Humidity Sun Wind Index (requires solar radiation sensor)

Range.....-90° to +165°F (-68° to +74°C)

 Accuracy
 ±4°F (±2°C) (typical)

 Update Interval
 10 to 12 seconds

Sources and Formulation Used United States National Weather Service (NWS)/NOAA

Steadman (1979) modified by US NWS/NOAA and Davis Instruments to increase

range of use and allow for cold weather use

Variables Used Instant Outside Temperature, Instant Outside Relative Humidity, 10-minute

Average Wind Speed, 10-minute Average Solar Radiation

Formulation Description Uses Heat Index as base temperature, affects of wind and solar radiation are

either added or subtracted from this base to give an overall effective temperature

Ultra Violet (UV) Radiation Dose (requires UV sensor)

Current Graph Data Latest Daily Total (user resetable at any time from Current Screen)

Historical Graph Data Hourly, Daily Totals (user reset from Current Screen does not affect these values)

Alarm High Threshold from Daily Total

Alarm Range..... 0 to 19.9 MEDs

Ultra Violet (UV) Radiation Index (requires UV sensor)

Update Interval 50 seconds to 1 minute (5 minutes when dark)

Current Graph Data Instant Reading and Hourly Average; Daily, Monthly High

Wind

Wind Chill (Calculated)

Range -110° to +135°F (-79° to +57°C)

 Accuracy
 ±2°F (±1°C) (typical)

 Update Interval
 10 to 12 seconds

Variables Used Instant Outside Temperature and 10-min. Avg. Wind Speed

Current Display Data Instant Calculation

Current Graph Data...... Instant Calculation; Hourly, Daily and Monthly Low

Historical Graph Data Hourly, Daily and Monthly Lows

Alarm Low Threshold from Instant Calculation

Wind Direction

Update Interval 2.5 to 3 seconds

Wireless Vantage Pro2[™]

Wind Speed

are converted from mph and rounded to nearest 1 km/hr, 0.1 m/s, or 1 knot.

Current Display DataInstant

High with Direction of High

Direction of Highs

Wireless Communications

Transmit/Receive Frequency

ID Codes Available.....8

Output Power

Range: All models except Japan

Range: Japan models

Sensor Inputs

RF Filtering......RC low-pass filter on each signal line

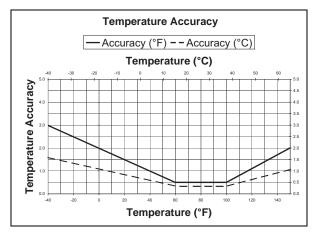


Figure 1. Temperature Accuracy

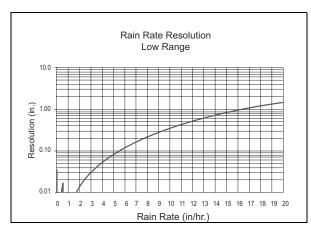


Figure 2. Low Range Rain Rate Resolution

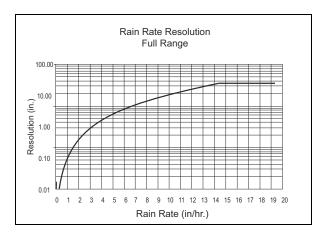


Figure 3. Full Range Rain Rate Resolution

Product #	Package Dimensions (Length x Width x Height)	Package Weight	UPC Codes
6152 6152EU 6152UK	17.50" x 10.4" x 16.0"	11 lbs. 13 oz. (5.4 kg)	011698 00229 0 011698 00347 1 011698 00348 8
6162 6162EU 6162UK	(445 mm x 264 mm x 406 mm)	11 lbs. 15 oz. (5.4 kg)	011698 00306 8 011698 00307 5 001698 00308 2
6153 6153EU 6153UK	14.9 x 12.9" x 23.4" (378 mm x 327 mm x 594 mm)	16 lbs. 11 oz. (7.6 kg)	011698 00335 8 011698 00336 5 001698 00337 2
6163 6163EU 6163UK		17 lbs. 5 oz. (7.9 kg)	011698 00341 9 011698 00342 6 001698 00342 3
6322 6322OV	17.50" x 10.4" x 16.0"	9 lbs 1 oz. (4.1 kg)	011698 00776 9 011698 00778 3
6327 6327OV	(445 mm x 264 mm x 406 mm)	11 lbs. 1 oz. (5.0 kg)	011698 00781 3 011698 00783 7
6323 6323OV	14.9" x 12.9" x 23.4" (378 mm x 327 mm x 594 mm	15 lbs. 15 oz. (7.2 kg)	011698 00779 0 011698 00780 6
6328 6328OV		16 lbs. 8 oz. (7.5 kg)	011698 00784 4 011698 00785 1
6312 6312EU 6312UK	12.6" x 9.3" x 2.5" (320 mm x 235 mm x 64 mm)	2 lbs. 10 oz. (1.2 kg)	011698 00724 0 011698 00766 0 011698 00767 7